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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,271	11/02/2001	Chih-huei Wu	004320.P047	3535
25096	7590	01/19/2005	EXAMINER	
PERKINS COIE LLP			WILSON, ALLAN R	
PATENT-SEA			ART UNIT	
P.O. BOX 1247			PAPER NUMBER	
SEATTLE, WA 98111-1247			2815	

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,271

Applicant(s)

WU ET AL.

Examiner

Allan R. Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,10-14 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 2,9 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>0703</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 6 and 7 are rejected under 35 USC § 103 (a) as being unpatentable over Brown et al. ("Brown") U.S. Patent No. 5,394,005.

With regards to claim 1, Brown illustrates in figures 2-4, particularly figure 2, (entire document) a semiconductor substrate 11, 13 having a first conductivity type; and a layer 24 of a second conductivity type formed on the semiconductor substrate, the surface of said layer being passivated by a nitrogen dopant (col. 6, lines 49-51).

Brown does not show a well. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a well to provide a planer topography.

With regards to claim 3, Brown discloses the claimed invention except for 1×10^{14} to $1 \times 10^{16}/\text{cm}^2$. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a concentration of 1×10^{14} to $1 \times 10^{16}/\text{cm}^2$, since it has been held that where the general conditions of a claim are disclosed in the prior art discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

With regards to claim 4, Brown discloses in col. 7, lines 1-6, a silicon oxide layer over said first layer.

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With regards to claims 6 and 7, the examiner had to assume what the product would be by the process claimed. For example, in claim 6 it was assumed that the product was a nitrogen doped layer. The claim that it was “nitrogen dopant is introduced using ion implantation” was not considered to have full patentable weight. A “product by process” claim is directed to the product per se, no matter how actually made, MPEP 2113 “Product-by-Process Claims,” In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90; In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Claim 5 is rejected under 35 USC § 103 (a) as being unpatentable over Brown as applied to claim 1 above, and further in view of Takasaki et al. (“Takasaki”) U.S. Patent No. 4,581,622. Brown is discussed above, it does not show a silicon oxynitride layer over a device. Takasaki discloses in at least the title and abstract a silicon oxynitride layer over a device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a silicon oxynitride layer to enhance UV transmissivity while exhibiting the desirable moisture proofness quality.

Claims 8, 10 and 11 are rejected under 35 USC § 103 (a) as being unpatentable over Brown as applied to claim 1 above, and further in view of Yamazaki U.S. Patent No. 4,451,838.

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With regards to claim 8, Brown is discussed above, it does not show "said nitrogen dopant is replaced with an oxygen, hydrogen or silicon dopant." Yamazaki discloses in col. 3, lines 44-58, nitrogen dopant is replaced with an oxygen or hydrogen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to dopant oxygen or hydrogen to produce a layer with a band gap of 1.2 to 1.8 eV. A band gap is chosen for it sensitivity to a certain wavelength.

With regards to claim 10, Brown discloses the claimed invention except for 1×10^{14} to $1 \times 10^{16}/\text{cm}^2$. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a concentration of 1×10^{14} to $1 \times 10^{16}/\text{cm}^2$, since it has been held that where the general conditions of a claim are disclosed in the prior art discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

With regards to claim 11, Brown discloses in col. 7, lines 1-6, a silicon oxide layer over said first layer.

Claim 12 is rejected under 35 USC § 103 (a) as being unpatentable over Brown in view of Takasaki as applied to claim 8 above, and further in view of Takasaki et al. ("Takasaki") U.S. Patent No. 4,581,622. Brown in view of Takasaki is discussed above, they do not show a silicon oxynitride layer over said layer. Takasaki discloses in at least the title and abstract a silicon oxynitride layer over a layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a silicon oxynitride layer to enhance UV transmissivity while exhibiting the desirable moisture proofness quality.

Claims 13 are rejected under 35 USC § 103 (a) as being unpatentable over Brown as applied to claim 1 above, and further in view of Zhao, U.S. Patent No. 6,339,248. Brown is

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discussed above, it does not show reset, buffer or row select transistors. Zhao illustrates in figure 8 a reset transistor 121 coupled to a photodiode 103, 131 for resetting the signal level on the photodiode; a buffer transistor 151, the gate of the buffer transistor being coupled to the output of the photodiode; and a row select transistor 153, the gate of the row select transistor being coupled to a row select signal line, the input of the row select transistor being coupled to the output of the buffer transistor, and the output of the row select transistor providing the output of the pixel sensor cell.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have reset, buffer or row select transistors for the benefits listed in Zhao col. 3, lines 1-23.

Claims 14, 16 and 17 are rejected under 35 USC § 103 (a) as being unpatentable over Brown in view of Zhao as applied to claim 13 above, and further in view of Yamazaki U.S. Patent No. 4,451,838.

With regards to claim 14, Brown in view of Zhao are discussed above, they do not show “said nitrogen dopant is replaced with an oxygen, hydrogen or silicon dopant.” Yamazaki discloses in col. 3, lines 44-58, nitrogen dopant is replaced with an oxygen or hydrogen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to dopant oxygen or hydrogen to produce a layer with a band gap of 1.2 to 1.8 eV. A band gap is chosen for its sensitivity to a certain wavelength.

With regards to claim 16, Brown discloses the claimed invention except for 1×10^{14} to $1 \times 10^{16}/\text{cm}^2$. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a concentration of 1×10^{14} to $1 \times 10^{16}/\text{cm}^2$, since it has been held that

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where the general conditions of a claim are disclosed in the prior art discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

With regards to claim 17, Brown discloses in col. 7, lines 1-6, a silicon oxide layer over said first layer.

Claim 18 is rejected under 35 USC § 103 (a) as being unpatentable over Brown in view of Zhao as applied to claim 13 above, and further in view of Takasaki et al. ("Takasaki") U.S. Patent No. 4,581,622. Brown in view of Zhao are discussed above, they do not show a silicon oxynitride layer over a device. Takasaki discloses in at least the title and abstract a silicon oxynitride layer over a device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a silicon oxynitride layer to enhance UV transmissivity while exhibiting the desirable moisture proofness quality.

Claim 19 is rejected under 35 USC § 103 (a) as being unpatentable over Zhao and further in view of Takasaki. Zhao is discussed above, it does not show a silicon oxynitride layer over a device. Takasaki discloses in at least the title and abstract a silicon oxynitride layer over a device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a silicon oxynitride layer to enhance UV transmissivity while exhibiting the desirable moisture proofness quality.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Allowable Subject Matter

Claims 2, 9 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Rhodes (illustrates a circuit similar to the one claimed) and Wegleiter et al. (illustrates an image sensor with nitrogen dopant).

Field of Search	Date
U.S. Class and subclass: 257/461-463	January 18, 2005
Other Documentation: None	N/A
Electronic data base(s): EAST (USPAT, US-PGPUB, JPO, EPO, Derwent, IBM TDB)	January 18, 2005

Any inquiry concerning this communication or earlier communications from an examiner should be directed to Primary Examiner Allan Wilson whose telephone number is (571) 272-1738. Examiner Wilson can normally be reached 7:00-4:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "A. Wilson", with a long horizontal flourish extending to the right.

Allan R. Wilson
Primary Examiner
January 18, 2005